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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/757,654      | 01/11/2001  | Mutsuhiro Yamanaka   | 54024-026           | 8020             |

7590 06/17/2005

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| EXAMINER |
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QUIETT, CARRAMAH J

|          |              |
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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2612

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |  |                     |  |
|------------------------------|------------------------|--|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> |  | <b>Applicant(s)</b> |  |
|                              | 09/757,654             |  | YAMANAKA ET AL.     |  |
|                              | <b>Examiner</b>        |  | <b>Art Unit</b>     |  |
|                              | Carramah J. Quiett     |  | 2612                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance, except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 6-8 and 11-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                        |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____   |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of the First Species (claims 1-5, 9 and 10) over the phone (see Examiner-Initiated Interview Summary, PTOL-413B) on Wednesday, June 08, 2005 is acknowledged.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

3. The information disclosure statement (IDS), filed on 01/11/2001, has been placed in the application file, and the information referred to therein has been considered as to the merits.

### ***Specification***

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

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subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 1, 2, 5 and 9** are rejected under 35 U.S.C. 102(e) as being anticipated by Paik et al. (U.S. Pat. #6,154,574).

Regarding **claim 1**, Paik discloses an image processing apparatus (fig. 1) comprising:  
an obtaining section (10) for obtaining image data generated by converting an optical image passing through an optical system into digital data (col. 1, lines 45-49; col. 3, lines 17-19). Additionally, please read col. 4, lines 62-67 and col. 9, lines 18-32. Please note that they optical system as pointed out in Paik is a video camera or camcorder (col. 9, lines 29-32).

a processing section (20) for applying a degradation function based on a degradation characteristic of at least one optical element comprised in said optical system to said image data (col. 3, lines 38-64) and restoring said image data by compensating for a degradation thereof (col. 3, lines 17-19).

For **claim 2**, Paik discloses an image processing apparatus wherein said degradation function depends on a position of each pixel. Paik's digital focusing apparatus (in fig. 2) divides a defocused image into sub-images (pixels) of a predetermined size (Step 30) and then estimates an edge direction of each of the divided sub-images (Step32 – also see fig. 3).

For **claim 5**, Paik discloses an image processing apparatus wherein said degradation function corresponds to a plurality of pixels (col. 3, lines 60-64; col. 5, lines 19-24; col. 9, lines 18-32).

Regarding **claim 9**, Paik discloses an image pick-up apparatus (fig. 1; col. 9, lines 29-32) comprising:

a generating section (10) for generating image data by converting an optical image passing through an optical system into digital data (col. 1, lines 45-49). Additionally, please read col. 4, lines 62-67 and col. 9, lines 18-32. Please note that the optical system as pointed out in Paik is a video camera or camcorder (col. 9, lines 29-32).

an outputting section (20) for outputting said image data out of said apparatus together with information for restoring said image data (col. 3, lines 17-19), said information including a degradation function based on a degradation characteristic of at least one optical element comprised in said optical system (col. 3, lines 38-64; col. 9, lines 18-32). Additionally, please read col. 9, lines 33-53.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 3-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Paik et al. (U.S. Pat. #6,154,574) in view of Kawaguchi et al. (U.S. Pat. #6,356,304).

For **claim 3**, Paik teaches an image processing apparatus wherein said degradation function is based on a focal length and an in-focus lens position (col. 9, lines 27-29). Additionally, he states that his digital focusing method and apparatus in an image processing can adjust the focus of an image electronically or digitally by using an infrared device or a lens driving motor (col. 9, lines 33-38). However, Paik does not expressly disclose an image

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processing apparatus wherein said degradation function is based on an aperture value. In a similar field of endeavor, Kawaguchi discloses an image processing apparatus (fig. 1) wherein said degradation function (MTF, col. 2, lines 58-65) is based on an aperture value (col. 5, lines 24-30). In light of the teaching of Kawaguchi, it would have been obvious to one of ordinary skill in the art at the time the invention of Paik was made to provide an image processing apparatus wherein said degradation function is also based on an aperture value in order to correct the brightness of the image, thereby improving image resolution (Kawaguchi, col. 2, lines 1-7).

For **claim 4**, Paik teaches an image processing apparatus wherein said degradation function is based on a focal length and an in-focus lens position (col. 9, lines 27-29). Additionally, he states that his digital focusing method and apparatus in an image processing can adjust the focus of an image electronically or digitally by using an infrared device or a lens driving motor (col. 9, lines 33-38). However, Paik does not expressly disclose an image processing apparatus wherein said degradation function is generated from conditions of a lens system and a diaphragm in said optical system. In a similar field of endeavor, Kawaguchi discloses an image processing apparatus (fig. 1) wherein said degradation function (MTF, col. 2, lines 58-65) is generated from conditions of a lens system and a diaphragm in said optical system (col. 9, lines 24-39). In light of the teaching of Kawaguchi, it would have been obvious to one of ordinary skill in the art at the time the invention of Paik was made to provide an image processing apparatus wherein said degradation function is generated from conditions of a lens system and a diaphragm in said optical system in order to correct the brightness of the image, thereby improving image resolution (Kawaguchi, col. 2, lines 1-7).

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9. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Paik et al. (U.S. Pat. #6,154,574) in view of Olsson (U.S. Pat. #6,445,415).

Regarding **claim 10**, Paik discloses an image processing apparatus (fig. 1; col. 9, lines 29-32) comprising:

a receiving section(10) for receiving a plurality of image data sets (col. 1, lines 45-49).

Additionally, please read col. 4, lines 62-67and col. 9, lines 18-32. Please note that they optical system as pointed out in Paik is a video camera or camcorder (col. 9, lines 29-32).

a calculating section (fig. 2) for calculating a degradation function on the basis of a difference between said plurality of image data sets (col. 4, lines 48-53); and

a restoring section (20) for restoring one of said plurality of image data sets by applying said degradation function (col. 3, lines 17-19; col. 3, lines 38-64).

However, Paik does not expressly disclose a receiving section for receiving a plurality of image data sets *generated by two or more consecutive image captures*. In a similar field of endeavor, Olsson teaches that an image is created electronically from a sensor in the camera and is based on a multi photo technique (Abstract). In light of the teaching of Olsson, it would have been obvious to one of ordinary skill in the art at the time the invention of Paik was made to improve Paik's image processing apparatus with a feature for generating two or more consecutive image captures, which can be used for optical calculations of an focused and unfocused image (Olsson, col. 7, lines 44-48).

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

|                                |   |
|--------------------------------|---|
| Sumitomo et al. (2002/0164082) | Image processing apparatus for performing image restoration.                                  |
| Morino (6,822,758)             | Image processing apparatus forming a degradation function.                                    |
| Kopeika et al. (5,790,709)     | Method and apparatus for calculation a degradation function and restoring the degraded image. |
| Dance et al. (6,285,799)       | Method and apparatus for measuring point spread function (PSF).                               |

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carramah J. Quiett whose telephone number is (571) 272-7316. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

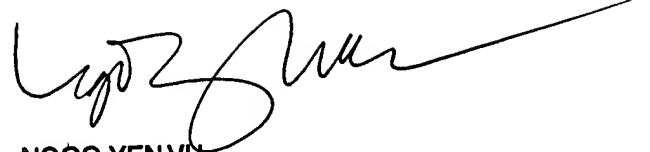
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CJQ

June 13, 2005

A handwritten signature in black ink, appearing to read 'Ngoc-Yen Vu', with a long horizontal flourish extending to the right.

NGOC-YEN VU  
PRIMARY EXAMINER